

OMNIITOX: Editorial

Increasing the Acceptance and Practicality of Toxicological Effects Assessment in LCA

A 5th European Research Framework Programme Project

Operational Models and Information tools for Industrial applications of eco/TOXicological impact assessments*

David W. Pennington (Special Edition Editor)¹

Editorial: Rana Pant (Procter & Gamble), Frans M. Christensen (European Chemicals Bureau), and David W. Pennington

¹ Senior Scientist, European Commission, Joint Research Centre Institute for Environment and Sustainability, Soil and Waste Unit, I-21020 Ispra (Va), Italy (david.pennington@jrc.it)

LCA is a general tool, supporting applications such as decision-making in product development while of growing interest in policy and strategic support circles. However, despite the many recent advances and consensus-building developments, methods for the characterisation of toxicological effects within the LCA community continue to provide sometimes diverging and doubtful results. This is compounded by often lacking data for more comprehensive assessments, where this is desirable.

A need exists to focus on issues such as data availability, methodology, and interfaces with other scientific and political fields in the context of toxicological effect assessments in LCA. This special issue gives a snapshot of the current findings of the European project OMNIITOX (Operational Models and Information tools for Industrial applications of eco/TOXicological impact assessments) which is scheduled for completion by the end of 2004.

The European Commission's Directorate General for Research (DG-Research) made the decision to fund the OMNIITOX project in its 5th Community Research Framework Programme. Started in spring 2001, the OMNIITOX project consortium consists of three large multinational companies, one smaller family-owned company, one consulting firm, one European governmental organisation and five academic partners. Via several work packs, an overarching deliverable of OMNIITOX is to enhance the efficiency and effectiveness of industry to select more environmentally benign chemicals and processes. The choice of more environmentally benign products, the focus of many of the partners in this project, was seen as a clear market advantage for companies that influences both competitiveness and economic growth. In addition, how LCA may potentially contribute to the risk management of chemicals to avoid burden shifting along the life cycle and between different environmental issues is of interest to both the industry and government partners.

Industry is in a key position to make valuable contributions to sustainable development with more eco-efficient processes and products that also meet consumer needs. Central to this are tools to assess the interactions of chemicals with natural ecosystems and human health from a product life cycle perspective. This has to be achieved in a scientifically agreeable and, at the same time, practical way. At the moment we are experiencing the natural tension that exists between these two objectives.

The European Commission, represented by the Directorate General Joint Research Centre's (JRC) European Chemicals Bureau (ECB), is a partner in the OMNIITOX consortium. Participation, as with funding of framework program projects, does not imply any form of endorsement. But, in a broad policy context, the European Commission has clearly set LCA on its agenda, with, for example, the Integrated Product Policy (IPP) communication (CEC 2003a).

LCA continues to grow in use in member states of the European Union and within the Commission. The proposed Ecodesign re-

quirements for Energy Using Products Directive (COM 2003, 453) is of particular interest in contributing to the definition of practical life cycle thinking and LCA, as are the overarching Directives on Strategic Environmental Assessment (2001/42/EC) and Environmental Impact Assessment (1997/11/EC). The European Commission's *White paper: Strategy for a Future Chemicals Policy* (CEC 2001) further emphasised that increased research on the LCA of chemicals is needed. This highlighted the necessity of information exchange in chemical supply chains. UNEP has similarly continued activities to increase the broader, global application of LCA – now with the UNEP/SETAC Life Cycle Initiative. And, in 2001, the OECD concluded in the *Environmental Outlook for the Chemicals Industry* the need for "creating a holistic approach to chemical safety that not only addresses the risks to man and the environment resulting from the production of individual substances, but also the risks posed by products made from these substances and by the use of natural resources and energy to create these substances and products" (OECD 2001). As a consequence, the OECD has proposed a Chemical Product Policy (CPP) that looks at barriers and facilitators for information exchange in chemical supply chains.

With the developed 'Base Model' (BM) for calculating characterisation factors for many of the most commonly used chemicals and a 'Simple Base Model' (SBM) that will cover a wider range of substances, OMNIITOX introduces a tiered approach to modelling in LCIA. The objective is to provide meaningful characterisation factors for toxicological impacts for a broad range of chemicals, while taking into account data availability and data quality constraints. Main outputs from the project described further in the papers in this special edition include a web-based tool with:

- 1) LCIA/(E)RA data search capabilities,
- 2) newly developed calculation tools that take into account various levels of data availability, and
- 3) the provision of guidance and information available for LCA/(E)RA practitioners.

References

- CEC (Commission of the European Communities) (2001): *White paper: Strategy for a Future Chemicals Policy*. COM (2001) 88 final (CEC, Brussels, February, 2001)
- CEC (Commission of the European Community) (2003a): *Communication from the Commission to the Council and the European Parliament – Integrated Product Policy – Building on Environmental Life-Cycle Thinking*. COM (2003) final (Brussels, Belgium)
- CEC (Commission of the European Communities) (2003b): *Proposal for a Regulation of the European Parliament and of the Council concerning the Registration, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency and amending Directive 1999/45/EC and Regulation (EC) on Persistent Organic Pollutants*. COM (2003) 644, Brussels, 29 October 2003
- OECD (Organisation for Economic Co-operation and Development) (2001): *OECD Environmental Outlook for the Chemicals Industry*. OECD Environment Directorate, Paris, France

* <http://www.omniitox.net>